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NEW GENERA OF FOSSIL FISHES FROM BRAZIL

BY DAVID STARR JORDAN

In the year 1909, through the courtesy of Dr. John C. Branner, the collection of fossil fishes of the Serviço Geológico e Mineralógico do Brazil was sent to me for study by the late Orville A. Derby, then head of the Survey and director of the Museu Nacional at Rio de Janeiro. For reasons, easily understood in these days of confusion, my report on these fishes has been delayed. As, however, reference is made to the new genera concerned in a forthcoming treatise by Dr. Branner on the geology of Brazil, it seems desirable to publish the three new genera named in this report.

The specimens concerned are of the Cretaceous age and came from Barra do Jardim, Serra do Araripe, at Ceará, Brazil, the locality from which Gardner secured for Agassiz the original specimens of several species. These examples, like those of Agassiz, were originally rolled on the beach between tide marks, each becoming the nucleus of a clay concretion.

We may note in this connection that *Notelops brama* (Agassiz) is identical with *Calamopleurus cylindricus* Agassiz. It should apparently stand as *Calamopleurus brama*. *Cladocyclus gardneri* Agassiz is probably one of the Osteoglossidæ, and not related to the European species, *lewisiensis*, called *Cladocyclus* by Agassiz and others.

Family ELOPIDÆ.

ENNELICHTHYS new genus.

Type: *Ennelichthys derbyi* Jordan.

In the collection are two large skulls (No. 55 Jardim, and No. 57 Jardim, the latter with counterpart) of a large elopine fish evidently allied to the genus *Enneles* of Jordan and Branner. From the latter it is distinguished by its smaller mouth, the maxillary scarcely extending beyond eye, and by its excessively strong dentition, the anterior teeth in the lower jaws being long, sharp and fang-like; those of the upper jaws similar but smaller.

Ennelichthys derbyi new species.

The species named *Ennelichthys derbyi* in honor of the late Orville Adelbert Derby, formerly a fellow student in Cornell University,

and later the head of the Serviço Geologico e Mineralogico do-Brazil at Rio de Janeiro. The type of *Ennelichthys derbyi*, No. 55, is a head about 6 inches long, the left side somewhat crushed down, the right side intact, but more or less battered, especially posteriorly. Opercle battered, the subopercle not evident; bones of top of head rugose; preopercle broad, with radiating striae at angle; cheek covered by a large bone; two bones behind eye.

Mouth very large, very oblique, the lower jaw projecting; snout very short, about $5\frac{1}{2}$ in head; eye 5 in head; maxillary $2\frac{1}{2}$, mandible about 2. Both jaws with long, sharp, fang-like teeth anteriorly, the longest in front of lower jaw about $\frac{2}{3}$ to $\frac{1}{3}$ diameter of eye, the next longest on sides of mandible, about 8 of these evident. Posterior teeth of both jaws rather smaller, and the upper teeth apparently smaller, than lower and more widely set, but no small teeth and no broad teeth visible anywhere. A pit filled with stone on each side corresponding to the nostril. While most of the teeth are lost, fang-like teeth are seen at intervals in both jaws.

BRANNERION new genus.

Type: *Calamopleurus vestitus* Jordan and Branner.

The species described by Jordan and Branner under the name of *Calamopleurus vestitus*, should form the type of a distinct genus of Elopidae, distinguished by the long anal fin which begins under the last ray of the dorsal, and the deep short body with correspondingly long ribs. The scales are large, but of the same character as in *Calamopleurus*, and the lateral line is well developed.

The genera of Brazilian Cretaceous Elopidae may be thus compared with the living genera:

- a. ELOPINÆ: Pseudobranchiæ large (in living species) scales relatively small; last ray of dorsal not prolonged; anal smaller than dorsal; base of caudal more or less scaly.
- b. Dentition even, the teeth slender and close-set; dorsal with a sheath of scales.
- d. Anal fin long, beginning under last rays of dorsal, its rays 15 or more; ventrals below or before dorsal; scales rather large, 20 in a cross series below dorsal; lateral line well developed. (Teeth unknown). *Brannerion*.
- dd. Anal fin short, beginning well behind dorsal.
- e. Ventrals inserted under last rays of dorsal.
- f. Body compressed; subopercle nearly as large as opercle; scales small, about 35 in a cross series; lateral line well developed in perfect specimens (obsolete in those poorly preserved). *Calamopleurus*,

- ff. Body cylindrical, fusiform, scales firm, more or less crenulate, about 25 in a cross series; no lateral line, opercle very large, convex, much larger than subopercle. *Rhacolepis.*
- ee. Ventrals inserted under first ray of dorsal; lateral line well developed; body elongate; teeth small, even. *Elops.*
- bb. Dentition uneven, but weak; mouth moderate, oblique; scales large; caudal fin with about 10 broad, much-branched rays. *Anædopogon.*
- bbb. Dentition uneven, some of the teeth large, canines robust.
- g. Maxillary extending far beyond eye; front of jaws with very broad teeth; posterior teeth in lower jaw small and even. *Enneles.*
- gg. Maxillary scarcely extending beyond eye; front and middle of lower jaw with very long fangs; no broad teeth. *Ennelichthys.*
- aa. MEGALOPINÆ: Pseudobranchiæ none; scales large, firm; anal fin larger than dorsal; last ray of dorsal produced into a long filament; postorbital bones very thin, membranaceous; teeth uniform; body compressed.
- h. Dorsal fin inserted above ventrals. *Megalops.*
- hh. Dorsal fin inserted behind ventrals. *Tarpon.*

Family **ASPIDORHYNCHIDÆ.**

VINCTIFER new genus.

The Brazilian Cretaceous species hitherto referred to *Belonostomus* differs from the type of the genus in the very much greater depth of the scales composing the lateral line. These are anteriorly about five times as deep as long. The jaws are also more robust than in the typical species.

In the type of the genus *Belonostomus* (*B. tenuirostris*) the jaws are excessively elongated and the scales of the lateral line are scarcely larger than the others. I propose to separate *Belonostomus comptoni*, and the European species allied to it, as a distinct genus which may be called *Vinctifer*. It is characterized by the very deep band-like scales along the sides, the relatively short jaws, and the relatively robust body.